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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/596,847

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Jasko Musacendic

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EXAMINER

STEELE, JENNIFER A

ART UNIT

PAPER NUMBER

1782

MAIL DATE

DELIVERY MODE

05/11/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/596,847	<b>Applicant(s)</b> MUSAEFENDIC, JASKO	
	<b>Examiner</b> JENNIFER STEELE	<b>Art Unit</b> 1782	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 61-73 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 61-73 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

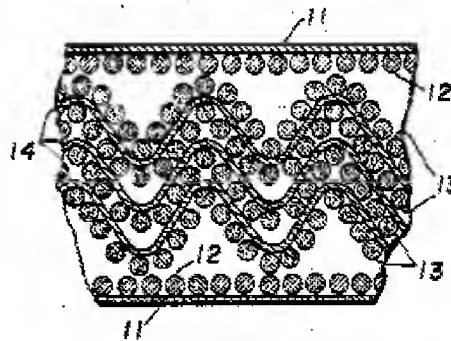
**1. Claim 61-73 rejected under 35 U.S.C. 103(a) as being unpatentable over Calfee (US 3,755,059) in view of Hollis, Sr. (US 3,969,563).** Claim 61 describes a high impact strength, elastic laminate system for enhancing impact resistant properties of a laminate structure, said laminate system comprising:

- a first outer layer
- a second outer layer
- at least two inner plies placed between the first and second outer layers;
- at least one dissipating element placed between said inner plies adapted to dissipate and redirect randomly directed local loading applied to at least one of said two outer layers, to tensile loading directed in longitudinal direction of said inner plies; and

Art Unit: 1782

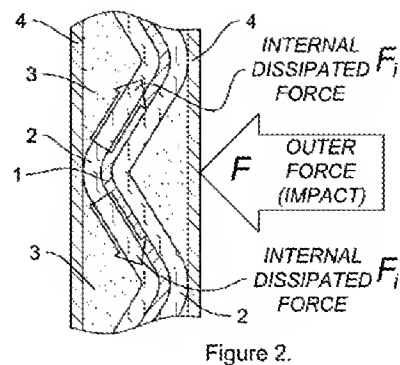
- a polymer matrix in between said first and second layer and said first and second plies,
  - said polymer matrix arranged to occupy all the volume not taken up by, and inbetween the said two outer layers, said at least two inner plies and said at least one dissipating element.

Calfee teaches a laminar composite of high impact and shearing resistance comprised of layers of graphite fiber, glass fiber and corrugated metal foil in an arrangement which resists spalling, interlaminar shearing and multipoint failure due to shock wave transmission (ABST). Calfee's laminate is show in Fig. 1 below where **11** is a metal foil layer and equated with Applicant's outer layers, **12** is a layer of glass fibers and equated with Applicant's inner plies, **13** are graphite fiber layers and equated with Applicant's inner plies and **14** are corrugated metal foil layers and equated with Applicant's dissipating elements.



Calfee Fig. 1

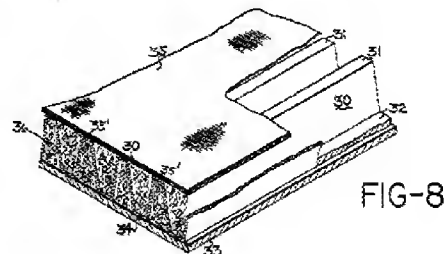
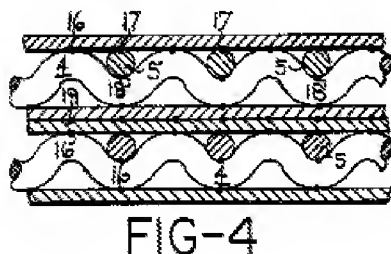
FIG. 1.



**Applicant's Fig. 2**

Calfee differs from the current application and does not teach a polymer matrix arranged to occupy all the volume not taken up by the layers.

Hollis teaches a protective wall structure that resists penetration and impact. Hollis teaches outer layers of multilayer cloth with at least one inner protective inner layer defined by a rib-like formation defining a series of pockets. The pockets are filled with a polymer self sealing core structure (ABST). The polymer is equated with Applicant's polymer matrix. The structure of Hollis is shown in embodiments in Fig. 4 and Fig. 8 below.



It would have been obvious to employ the polymer resin filled pockets of Hollis in the high impact laminate of Calfee motivated to increase the strength of the composite laminate.

Art Unit: 1782

As to claim 62, Calfee teaches additional layers of inner plies and dissipating elements.

As to claim 63, Calfee teaches the function of the inner plies is to serve as reinforcement. Calfee teaches that the glass fiber plies provide greater impact strength and therefore provide an improved laminate if the glass fibers are placed are located on the impact side (col. 2, lines 46-66).

As to claim 64, Calfee teaches the plies are made from S-glass, E-glass fibers (col. 3, lines 23-25).

As to claim 65, Calfee teaches a corrugated metal foil which is equated with Applicant's dissipating element and the corrugated sheet recited in the claim.

As to claim 66, Calfee teaches the metal foil is preferably made from a metal such as aluminum ,beryllium, magnesium, nickel, steel or titanium (col. 3, lines 20-23).

As to claim 67, Calfee teaches at least two dissipating ply elements and reinforcing fibrous plies. Calfee teaches the fibrous plies can have fiber orientations of 0 or 90 degree (Table 2) which would be a unidirectional or cross-ply orientation as claimed. Calfee teaches the effect on fiber orientation is minimal (col. 5, lines 1-11).

As to claim 68, Calfee teaches the fibrous plies are impregnated with an epoxy resin (col. 3, lines 46). Calfee differs and does not teach a polymer matrix between the inner plies and outer faces. Hollis teaches the polymer matrix which fills the voids can be of a epoxy-urethane elastomer (col. 10, lines 25-28).

As to claim 69, Calfee teaches the outer metal layers can be made from aluminum ,beryllium, magnesium, nickel, steel or titanium (col. 3, lines 20-23).

Art Unit: 1782

As to claim 70, Calfee differs and does not teach an additional layer on the outer layers of the composite laminate. Hollis teaches outer layers of multilayered cloth that can be aluminized (col. 7, lines 45-51). It would have been obvious to one of ordinary skill in the art to add additional outer layers motivated to improve the strength of the laminate and provide the desired outer surface.

As to claims 71-73, Calfee in view of Hollis teaches an impact resistant structure as claimed and therefore would possess the property of creating an equilibrium of dissipated loads. Calfee teaches the laminate can absorb impacts of lesser weights than claimed and Calfee differs and does not teach the density of the laminate. One of ordinary skill in the art could have optimized the layer thickness and number of layers motivated to produce a laminate that can dissipate a greater impact.

### ***Response to Arguments***

2. Applicant's amendments and arguments, with respect to the 35 USC 102 and 103 rejections over Bjorksten have been fully considered and are persuasive. The 35 USC 102 and 103 rejections over Bjorksten of 61-73 have been withdrawn. The invention of Bjorksten is directed to layers of dissipating elements and Examiner was equating the dissipating element layers with the inner plies. As claim 1 describes a dissipating element is placed between the inner plies adapted to dissipate and redirect randomly directed local loading applied to at least one of said two outer layer, the claim is distinguishing a dissipating element from an inner ply. The reference to Bjorksten is withdrawn.

Art Unit: 1782

3. Applicant's arguments filed 2/12/2010 have been fully considered but they are not persuasive. The 35 USC 103 rejection over Calfee in view of Hollis is maintained. Applicant argues the rejection over Calfee and Hollis comparing Calfee and Hollis to the claimed invention stating that Calfee does not teach three groups of at least five separate layers with fully separate functions. Calfee does teach three groups of at least five separate layers. Calfee teaches outer face layers, Calfee teaches inner plies such as the glass fiber layer and/or the graphite fiber layers. Calfee teaches metallic layers inbetween the graphite fiber layers and Calfee teaches the metallic/graphite layers are inbetween the glass fiber layers. While Calfee does not refer to the metallic foil layers as dissipating elements, Calfee teaches the corrugated metal foil in an arrangement which resists spalling, interlaminar shearing and multipoint failure due to shock wave transmission. Calfee further teaches that it was unexpectedly found that glass fiber layers located on the side of the laminate opposite from the side experience the impacts significantly improves resistance to impacts. Calfee presents a finding that one of ordinary skill in the art could have employed the sandwich structure claimed with a reasonable expectation of producing laminates resistant to high impacts.

Applicant argues that the dissipating elements of the invention form a net of triangular/multi-angular force equilibriums and act in a way to redirect outer force/loading from transversal to longitudinal components in the structure and that the dissipating elements are expanded structures, meshes. Applicant's arguments are not commensurate with the scope of the claims. Applicant has provided no structural limitations in the claims which would indicate that the dissipating elements as claimed



Art Unit: 1782

are distinct from Calfee. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., expanded structures, meshes) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant argues that neither of Calfee's plurality of layers is designed to perform the functions as claimed. Calfee does teach a laminate that can withstand impacts. Calfee teaches the same geometric orientation of the layers as taught by Applicant's specification and figures. Calfee teaches the same structure as claimed and the same materials, with the exception of the polymer matrix which Hollis is relied upon. Therefore it is reasonable to presume that the properties of impact resistance are inherent to the combination and the laminate would provide the same function. The combination of Calfee and Hollis present finding that one of ordinary skill in the art could have combined the claimed features with a reasonable expectation of success in producing an impact resistant laminate.

Applicant argues that Calfee clearly has a reverse impact side and the present invention has two equal faces whereby each one has a full and equal capacity to receive impact. The structure claimed by Calfee is the same on both sides and this reference in Calfee is presumed to be merely to differentiate the test results and to state that only one side of the laminate is hit with an impact. For example, if a composite laminate was subjected to a force by an object, one would measure the deformation of

Art Unit: 1782

the side hit by the object and the side that is not hit by the object. As described by Calfee, the laminate has two structurally equal faces.

Applicant concludes that the structure of Calfee does not play the same function as in Applicant invention. Therefore even if the prior art to Calfee and Hollis is combined, they could not result in the present invention being obvious. The claims are directed to an article and it is the structure of the article that is compared to the prior art. As the structures have the same materials and features and teaches the same function of being able to withstand an impact, the rejection is maintained. The burden is on the Applicant to provide evidence that the results of the combination produce an unexpected result. Applicant can also amend the claims to differentiate the structure from the prior art.

4. Applicant argues the reference to Hollis in the remarks under the rejection over Bjorksten, Cook and Hollis. Applicant compares the structure and function of Hollis to the invention and states the differences between Hollis and the current invention. Hollis is a secondary reference and relied upon for teaching the feature of a polymer in-between rib like structural elements sandwiched between two outer layers. Hollis is directed to an impact resistant wall. Hollis fills the spaces between the layers and elements with a polymer mixture. It would have been obvious to combine the technique of filling the void spaces with a polymer material motivated to improve the overall impact strength of the article.

Applicant noted that the PN of Hollis was incorrectly cited. While Hollis was correctly cited on the Notice of References Cited, the Office Action incorrectly typed the

Art Unit: 1782

patent number. The Office Action has corrected the PN associated with the reference to Hollis.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER STEELE whose telephone number is (571)272-7115. The examiner can normally be reached on Office Hours Mon-Fri 8AM-5PM.

Art Unit: 1782

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S./  
Examiner, Art Unit 1782

5/4/2010

/Rena L. Dye/  
Supervisory Patent Examiner, Art Unit 1782